can be explained by failure to follow his explicit instructions, and consequently failure resulted. Furthermore, he has never promised that a single dose of the remedy would be curative. Ehrlich says that from the first he has given as contraindications for salvarsan treatment those patients with irritable hearts due to nervous causes, organic heart disease, vascular degenerations, aneurysms, old cases of cerebral hemorrhage, and the aged. He now adds to this list the following: Serious nephritis, diabetes, and ulcer of the stomach. He does not consider the remedy a harmless one, but one that should be used with caution in properly selected cases. With regard to fatalities, he compares it to chloroform, saying that in healthy individuals there is 1 death in 50,000 anesthetizations, while in hospital practice this rate rises to 1 in 2070. He explains the few bladder disturbances that have been reported by an oxidation of the remedy because of defective bottles. He mentions the cases reported by Benario and others, of optic and auditory nerve affections following salvarsan injections, and relates similar recurrences in the nervous system that have been observed after mercurial treatment. He says that the fact that many of these were cured by subsequent injections of salvarsan, speaks emphatically against their toxic origin. Ehrlich repeats the warning that salvarsan should not be given to a patient who has had other arsenical treatment. To this fact of previous arsenical treatment he attributes the optic neuritis of a case of Finger. Ehrlich says that the best effects of salvarsan are seen in syphilitic mouth and throat affections, those of the nasal mucous membrane, secondary and tertiary skin manifestations, malignant syphilis, congenital syphilis, and those cases that do not yield to mercury. Ehrlich believes that, although he may not have attained his ideal of a therapia sterisans magna, still this remedy is an advance upon the former treatment, and he may in the future discover the ideal remedy.

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**Dehydration by Dietetic Measures.**—MAGNUS-LEVY (*Jour. Amer. Med. Assoc.*, 1910, lv, 2139) says that the dietetic treatment of circulatory diseases is essentially a form of protective therapy, a term that is better espressed by the German word *Schonungstherapie.* He discusses especially the methods of treatment as applied by Karell, Oertel, and Widal. The essential feature of the Karell treatment is the exclusive use of milk in relatively small quantities at definitely stated intervals. The idea underlying Oertel's method is a great reduction in the quantity of fluid ingested. The Widal treatment, on the other hand, consists in excluding sodium chloride as much as possible from the food, which in other respects is the ordinary mixed diet. Magnus-Levy discusses the theories and the methods of application of these different plans of treatment. He compares the different methods and points out their differences and similarities. The Widal treatment has a low sodium chloride content in common with the strict milk cure of Karell, but differs from that of Widal in the great reduction in the amount of all foodstuffs. The ordinary salt-poor diet as advocated by Widal contains only from 1.5 to 2 grams of salt, while 3 liters of milk, which is the minimum amount necessary to maintain equilibrium, contain 5 grams of sodium chloride. The method of Karell reduces the amount of all the foodstuffs. During the first week the patient does not receive even a fifth of his requirements, and during the first five or six weeks the physiological minimum is never reached. In many cases the Karell treatment is more suitable than that of Widal, but has the disadvantage that the patient loses considerably in body protein and fat. Magnus-Levy says that the ingestion of all organic foodstuffs increases the amount of fluid in the body in a manner similar to sodium chloride, though not to quite so marked a degree and by a somewhat different mechanism. Fat appears to do this least. The absorption of the carbohydrates demands considerable water since the glucose content of the blood serum rises only from 0.1 to 0.3 per cent. at the most. On the other hand, the water metabolism is most strongly influenced by the protein molecule. Not only does it require for its absorption and its transportation relatively large amounts of water, but its end-products also demand considerable amounts of fluids for their excretion. Thus, Oertel's two principles of low water and high protein intake—he required up to 200 grams of protein a day—are at variance with each other. The relationship of the protein metabolism and of sodium chloride to the water metabolism is particularly well shown in diabetes insipidus. In the true forms of this affection it is impossible to control the increased excretion of urine by applying Oertel's treatment, but thirst and the amount of urine excreted immediately become less when the amount of salt intake is reduced. The same result is obtained by reducing the protein intake. In a similar way the reduction of the amount of protein in the food is of benefit in all circulatory disorders, although the effect is not so noticeable as in diabetes insipidus. In discussing these three methods of reducing the amount of body fluids, Magnus-Levy says that the effect of reducing the water intake (Oertel's treatment) was especially marked in such cases where a great excess of water had previously been taken. He believes that the reduction of the amount of fluid ingested also acts indirectly by inducing the patient to become unconsciously more abstemious in eating, and usually to avoid strongly salted food which increases thirst. The reduction of sodium chloride (the method of Widal) is indicated especially in the œdema of parenchymatous nephritis, but is also useful in combating some of the symptoms of contracted kidney, such as headache, uremic asthma, angina pectoris, and pulmonary œdema. This treatment also has been valuable for diabetes insipidus and cirrhosis of the liver. Patients who have improved after such a diet should not return to their ordinary salty diet, although the excretory capacity for salt may undergo a considerable improvement. He suggests giving the patient accurately weighed quantities of salt which he may add to his food up to his individual limit of tolerance. Patients with diabetes insipidus must permanently refrain from a salty diet, since it is impossible to improve the capacity of the diseased kidney for excreting concentrated urine. The writer ascribes some of the benefits of the Karell method to the restricted protein intake. In addition to its immediate effect upon water metabolism a low protein diet probably acts favorably in other ways. Such a diet is particularly to be recommended in those cardiac patients who were previously high livers and exhibit a certain degree of plethora. It is also indicated in the later stages of chronic interstitial nephritis with uremic manifestations. Magnus-Levy says that these treatments should be carried out exactly according to the direction of Karell, Oertel and Widal, in order to overcome certain difficulties in their application. When this has been done a few times it will be easier to modify these treatments to suit individual cases.

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**The Administration of Salvarsan.**—MONTGOMERY (*Jour. Amer. Med. Assoc.*, 1911, lvi, 501) discusses in brief the remedy and the preparation of the solutions for intramuscular and subcutaneous use. He prefers the administration of salvarsan by intravenous injection since the remedy is given in a painless manner that insures the rapid diffusion of the full dose without running the risk of ensuing necrosis or abscesses, or of chronic arsenical poisoning from prolonged absorption. Montgomery gives a very clear and detailed description of the technique of the intravenous administration as practised by Schreiber. About 20 c.c. of warm distilled water are poured into a graduated glass cylinder of a capacity of 250 c.c. This cylinder should have a glass stopper. The glass capsule containing the salvarsan powder is now wiped off with gauze soaked in alcohol, and then with gauze soaked in ether. After breaking the capsule, the powder is poured on the water in the graduated glass tube, the stopper put in, and the contents well shaken. There is no necessity of using glass balls here, as the quantity of water is ample to dissolve the salvarsan readily. It is important not to reverse this procedure, for if the powder is poured into the tube first, and the water afterward, a gummy mass forms in the bottom that dissolves with difficulty. This solution should be light yellow and perfectly clear. That it should be clear is a matter of very great importance, as it is highly necessary that no undissolved particles be present. Now we have an acid solution in sterilized water of the contents of one tube, the quantity of which is usually 0.5 or 0.6 gram. If it is 0.5, the graduated tube should be filled up with water to the 50 c.c. mark; if 0.6, to the 60 c.c. mark, so that each 10 c.c. will represent 0.1 of the drug. Schreiber usually gives 0.3 gram of salvarsan to a woman and 0.4 gram to a man. If it is desired to give 0.4, he pours 40 c.c. of the acid solution into another graduate furnished with a glass stopper, and fills up to the 200 c.c. mark with warm sterilized water, and to this adds about 20 c.c. of normal sodium hydroxide solution. This should be added a little at a time, and each time a little is added the glass stopper should be put in and the cylinder well shaken. At first a precipitate forms that gradually disappears on the addition of more caustic soda solution. When the solution is again clear, it is alkaline and ready for injection. The flask containing the sterilized distilled water for use in making the solutions should not be stoppered with cotton, but with gauze, as cotton fibers, falling into the fluid, might cause trouble. The best syringe for injecting is a glass Lüer of about 20 c.c. capacity. It should not have a metal plunger, as in that case the least blood may cause binding. A two-way cock is introduced between the needle and the barrel. Schreiber has a special needle made with a bayonet bend in the shaft, and on this bend a ribbed finger-hold. The bayonet bend is to allow the needle to be more easily shoved along in the lumen of the vein. A rubber tube is fitted to the lateral outlet of the two-way cock. The arm is now laid out on a cushion, so as to lie flat and easy; a stout rubber tube is thrown around the middle of the upper arm and drawn tight enough to stop the flow of blood in the superficial veins, but not